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ABSTRACT

An investigation of children's metalinguistic and metacognitive competencies examined children's sensitivity to the verbs of cognition in two related studies using a task designed to measure mastery of verbs of saying and meaning. In the task the children hear six short stories, each ending with a statement containing one of the verbs "think," "know," or "pretend" followed by a plausible complement (e.g., "You think that your book is lost"). The children are asked after each story to judge the truth of the complement and justify the answer. The first study involved 72 children from grades 1 through 4 with normal intelligence and reading achievement, graded good, average, or poor by their teachers. A second study used more precise measures of reading skill and groups from grades 1 and 3 only. It was found that while knowledge of the cognitive verbs did not relate directly to reading skill, there was a relationship between reading skill and the tendency to justify answers by appealing to the text, which increased with grade level. It is suggested that this indicates the child is beginning to differentiate his interpretation of the text from what the text actually says and to justify the former on the basis of the latter. This demonstrates the metalinguistic skill of understanding the surface structure of language (what is said) and its interpretation (what is meant), are basic to acquisition of theoretical knowledge about the world and to entertaining complex mental states. (MSE)

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Language, Literacy and Mental States[1]

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The problem of meaning is central to an understanding of both language and of mental life. Speakers *mean* things by what they *say* and those meanings are part both of language and of minds. In language, we may think of these meanings as *sentence meanings*, or less ambiguously, as *semantic structures*. In minds, we may think of these meanings as *speakers' meanings* or *speakers' intentions*. Our concern in this paper is with the structure and implications of these concepts, and in particular, with childrens' mastery of these conceptual distinctions in the early school years. Our argument will be that as children work out distinctions appropriate to language, they are at the same time, working out concepts for thinking about their own and others' minds as well as concepts for thinking about the world. The critical distinctions are between form and meaning, action and intention, observation and inference, saying and meaning, or most generally between what is given and its interpretation. We can work this out most clearly by reference to the conceptual distinction between what is *said* and what is *meant*. And we can see the significance of this distinction by examining childrens' shifting orientations to language, to other minds and to the world.

The distinction between what is said and what is meant is neither simple nor conclusively resolved. Grice (1957) was among the first to develop an intentionalist theory of meaning and we shall adopt his distinction between sentence meaning and speaker's meaning here. Sentence meaning is a property of a linguistic form, its semantic structure. The sentence *The cup is empty* is such a semantic structure. It may be contrasted with the *meaning* on a particular occasion of use to make a statement that this particular cup, sitting here on the desk, is empty. This latter is the speaker's intended meaning, or in language that is becoming more popular, is the intended interpretation of the sentence. An interpretation

[1]The authors wish to acknowledge The Spencer Foundation and SSHRC for their support of the research reported in this paper, and Barbara Bell for her assistance in the design of materials and collection of data.

and an intention are both ways of referring to the meaning, one from the listener's side, the other from the speaker's side. The contrast between what is said and what is meant is that between a sentence and the intention it expresses. This is a distinction that is not at all obvious to children although as Wellman (this volume) has shown, it has clear antecedents in early childhood.

In our earlier studies we have shown that while children know enough about both semantic structure and about interpretations to successfully use the former in the service of the latter, they apparently fail to conceptually differentiate the two. The sentence meaning, the semantic structure, remains implicit and transparent relative to the putative intended meaning. There is no clear distinction between what was said and what was meant by it. Further, there is some evidence that the acquisition of these concepts is reflected in the metalanguage; they begin to use *say* and *mean* contrastively, as in "I said *x* but I meant(or should have said) *y*" about the time they make the conceptual distinction.

One of those earlier studies built on the findings of Robinson and Robinson (1977a and b) that in cases of communication failure younger children blamed the listener rather than the faulty message generated by the speaker. To illustrate, if a child in a communication game intends to say "Pick up the blue flower" (that is what the child means), but inappropriately says just "flower", and the listener picks a red flower in response to the command, the younger children blame the listener, whether self or other, rather than the speaker or the message. This bias disappears about the second grade of school. In our collaborative study (Robinson, Goelman and Olson, 1983) we attempted to determine if the bias to *blame the speaker* was a reflection of the failure to distinguish what a speaker says from what the speaker means by it, a conflation, from an adult point of view, of the two kinds of meaning. In this experiment, each time that the child inappropriately blamed the listener, regardless of whether the child was speaker or listener, the child was asked what the speaker (whether child or adult) had said. This question was asked only when, by looking (on the sly) at the object in the speaker's hand, it was clear what the actual intended object had been.

Hence the children had independent evidence for both what was said (the semantic structure) and what the speaker had meant (the interpretation). If children conflate the two, they should answer the question: "What did (the speaker) say?" with a correct description of the intended object rather than with a correct repetition of the sentence. If they differentiate the two, they have the option of saying something of the form "I (you) said *x*, but I (you) meant *y*". In fact, the former is just what the children 6 and younger did while the latter is what the children 7 and older did. Specifically, if the child said *flower* while holding (and intending to refer) to a blue flower, and the listener picked up a red flower, the message may have resulted in a failure of communication. When asked "What did I (you) say?" the younger children replied "The blue flower". That, of course, was what was meant but not what was said. The older children conceded that the speaker had said *flower* but meant or should have said *the blue flower*. Note that the conceptual distinction between what the sentence said and the intention/interpretation assigned is perfectly reflected in the child's knowledge of the metalanguage. If the child discriminates an adequate from an inadequate or ambiguous message, she knows the metalanguage for marking that distinction, namely what *say* and *mean* mean.

Although there is considerable disagreement as to what such developments mean, there is now a rich literature on children's growing metalinguistic and metacognitive competencies. Beal and Flavell (in press) found that children, having once decided upon an interpretation or a *communicative intent*, were unable to see a message's potential ambiguity. Hakes (1980) found a steady progression in children's ability to treat language as an object and to use metalinguistic categories. Donaldson (1978) too, found that children ignored variations in linguistic form in the interest of a plausible and economical interpretation. But while some writers see this development as an indication of general cognitive development, others see it as coming to recognize that different speakers may hold different beliefs and interpretations, and still others see it as a problem of referential or linguistic ambiguity. We have argued that it is an indication of the conflation of language and intention;

differentiation of these categories is tied, we suspect, to the progressive mastery of the language of saying and meaning.

The Think, Know, Pretend Task

Over the past year and a half, we have been developing several tasks for measuring children's mastery of verbs of saying and meaning. These tasks, described in Olson and Torrance (in press), generally involve having the child listen to 3 or 4 sentence-long stories, and then answer questions about intended meaning, about the truth or falsity of a proposition embedded in the story, about the most appropriate verb to complete the story, and finally to justify their responses. Such justifications tended to fall roughly into two categories, those based on an appeal to the wording of the story and those based on elaborations, fabrications and additions to the story. Our concern has been to examine children's competence with these verbs and to examine the relation between knowledge of the verbs of thinking, the forms of justification they use and the level of reading competence.

We have now used one of these tasks in two studies designed to examine sensitivity to the verbs of cognition. In this task, children hear six short stories, each ending with a statement containing one of the verbs *think*, *know* or *pretend* followed by a plausible complement (e.g. You *think* that your book is lost.) The children are asked after each story to judge the truth of the complement (Is your book lost?) and to justify their responses. The appropriate judgments for the complements following the verb *know* was "Yes", for those following *pretend* was "No", and for those with *think* was "Maybe". The six stories and target sentences are shown in Table 1.

Insert Table 1 about here

In a training session immediately prior to testing, the contrastive meanings for the three verbs were elicited from subjects. All subjects tested to date have produced the desired contrast in meaning in the course of the pre-test session. That is, they say during the training session that something that is pretended is not real, something that is known is real and

something that is thought may be real or not real. Yet subjects differ in their ability to respond to a question about the truth or falsity of the complements of these verbs "If you (*know*, *think*, *pretend*) that X, do you really X (is it really X)?" and they also differ in the justifications that they give to the question "Why do you say Yes/No/Maybe?". Some children appeal to the verb in the original story while others justify their answers with elaborations, fabrications or additions to the story.

In the first study, subjects were seventy-two children, four groups of eighteen children, drawn from Grades 1 through 4. They were within the normal range of intelligence and reading achievement and they all spoke English at home as well as at school. Children were assigned scores for reading on a 3-pt scale (Good, Average, Poor) by their classroom teachers.

Responses to the Yes/No/Maybe question were scored as correct or incorrect. The justifications given for answers were categorized according to the following hierarchy (Examples are given for Item 1; see Table 1):

1. Appeal to text

    - explicit "cause if you pretend, it's not really lost" *pretend*
    - implicit "cause if you don't know, it might or might not" *think*

2. Extrapolations

    - fabrications "cause you don't want to do your homework" *think*
    - elaborations "cause it's not in your room" *know*
    - other additions "cause I never lose my books" *know*

3. Irrelevant "don't know", etc.

Results of an analysis of variance on number of correct responses to the Yes/No/Maybe question revealed no effect for Grade but a highly significant effect for Verb, $F(2, 136) = 26.39$, $p<.001$. The number of items correct for the verbs *pretend* and *know* were essentially at ceiling. Performance for the verb *think* was significantly worse at all Grade

levels. There was no significant Grade X Verb interaction. The type of justifications that children advanced to explain their answers did change with age. An analysis of variance on the number of justifications that were appeals to text yielded significant effects for Grade, $F(3, 68) = 3.68$, $p<.05$, for Verb, $F(2, 136) = 4.57$, $p<.02$, and for the Verb X Grade interaction, $F(6, 136) = 2.32$, $p<.05$. Further analysis of the two-way interaction indicated that there were no Grade effects for the verbs *know* and *pretend* but there was a significant Grade effect for the verb *think*. These results are shown in Figure 1.

Insert Figure 1 about here

This analysis shows that Grades 3 and 4 children were more likely to appeal to the verb in justifying their responses than were Grade 1 children. Further, a correlation was calculated at each Grade level between individuals' reading scores and the number of justifications that were appeals to the text. These correlations were all positive and were higher for Grades 3 and 4 (.48 and .41 respectively) than for Grades 1 and 2 (.33 and .26 respectively). Hence, we conclude that while the knowledge of the cognitive verbs did not relate directly to reading skill, there was a relationship between reading skill and the tendency to justify answers by appealing to the text, a tendency that increased with grade level.

Since estimates of reading skill in this first study were based only on teachers' ratings, a second study was run in which more precise measures of reading skill were obtained. In this case, two groups of eighteen children, one group from Grade 1 and the other from Grade 3, were subjects. The *think*, *know*, *pretend* task was presented in the same manner as before. Responses to the Yes/No/Maybe questions were scored for correctness as before. Justifications to the "Why do you say *x*?" question were categorized as appeals to the text or as extensions, extrapolations or additions to the story.

The results for this study are presented graphically in Figure 2. The number of answers that were correct to the questions of the truth or falsity of the complement following the verbs (Figure 2a) revealed both significant Grade effect, $F(1, 34) = 11.88$, $p<.01$, Verb

effect, $F(2, 68) = 17.9$, $p < .01$, and a significant Verb by Grade interaction, $F(2, 68) = 5.48$, $p < .01$. The verb effects are a simple consequence of the fact that children, even in the first grade answered, "No" to the questions following the verb *pretend*, and so got them correct while doing significantly more poorly on those containing *know* or *think*. The Verb by Grade interaction is a consequence of the fact that although even the youngest children answered the *pretend* questions correctly, the Grade 3 children were significantly better than the Grade 1 children on the other verbs.

Insert Figure 2 about here

The ways that children justified their responses turned out to be more informative than the sheer number of correct responses. These data are shown in Figure 2b. For justifications based on an explicit or implicit appeal to the text, there was a significant Grade effect, $F(1, 68) = 25.84$, $p < .01$, a significant Verb effect, $F(2, 68) = 3.84$, $p < .05$, but no Verb X Grade interaction. For all three verbs the Grade 3 children were more likely to appeal to the text while the Grade 1 children appealed to added elaborations or fabrications. A typical response of the younger children to the story ending: "John knew that his book was lost. If John knew that it was lost, was it lost?" was "No, he just didn't want to do his homework."

Both of these measures were expected to reflect what was said as opposed to what was meant, whether through justifications by appeal to what was said, or to the possibility that what is really the case may be different from what one thinks, knows or pretends to be the case. Hence, it is important to see if these two measures are related. For the Grade 1 children, the correlation is low but positive ($r = .17$). For the Grade 3 children, on the other hand, the correlation is extremely high ($r = .80$); children who answered the questions correctly also justified their answers by appeals to the text.

Next, to examine the relationship between children's performance on the *think, know, pretend* task and reading skill, we administered three reading and comprehension tasks: oral reading of paragraphs, decoding of pseudowords, and a listening comprehension

test in which performances on recall of story events and on inferences drawn from the story were measured separately. If justifying one's answers on the basis of what the text says is relevant to the comprehension of sentences describing mental states, perhaps it it relevant to reading comprehension more generally. The evidence provides some support for this notion. In Grade 1, appealing to the text in justifying responses, related to three of the reading measures, oral reading of paragraphs ($r = .52$), pseudoword decoding ($r = .51$) and the drawing of inferences ($r = .36$) in the Listening Comprehension task. In Grade 3, both the number of correct responses ($r = .45$) and appealing to the text in justifying responses ($r = .32$) related to drawing inferences in the Listening Comprehension task, but not to oral reading or decoding. For the youngest children, oral reading, decoding, recalling and inferring are all highly intercorrelated (from $r=.25$ to .79). Hence, it is not surprising that they are all related to the tendency to justify answers to questions by appealing to the text. For the Grade 3 children, the correlations among the reading tasks fall substantially (from -.06 to .38) indicating that oral reading and decoding are no longer so closely related to making inferences from text. Hence, again, it is not surprising that those who performed better on the *think, know, pretend* task also did better on the inference section of the Listening Comprehension task; performance on the *think, know, pretend* task is more closely related to problems of comprehension than to those of decoding.

We suggest that sensitivity to the cognitive verbs in this task and an appeal to those verbs in justifying their responses indicate that the child is beginning to differentiate his interpretation or comprehension of the text from what the text actually says and to justify the former on the basis of the latter. In other words, the child is beginning to demonstrate the metalinguistic skill of understanding the relationship between the surface structure of language (what was said) and its interpretation (what was meant). Such a child could reasonably be expected to display some skill at drawing the appropriate interpretation for a passage: He or she not only knows what was written and what the author intended to convey through the writing, but also that there is a difference between the two.

These findings, then, encourage our general theory of literacy, namely that writing in general and learning to cope with written language in particular, involves learning to differentiate what is said, that is, what is given in the text, from the interpretation the reader assigns in comprehending that text (Torrance & Olson, 1984). The comprehension of the mental verbs, *think*, *know* and *pretend*, mark off a corresponding distinction between things that really happen and our mental representations of them. In this study, the two developments, at least in a story comprehension context, turned out to be highly related; children who answered the questions appropriately tended to be those who could also justify their answers by an appeal to the text.

Conclusions

To this point, we have considered the ways in which young children come to treat a text as an object such that they can begin to contrast what a text *says* with the interpretations which may be assigned, that is, what the text *means*. Once they have made the distinction, they can use the former to justify the latter. Thus, as we have seen, the child will justify the answer *Maybe* by appealing to the text: The character in the story does not know for sure because the story *said* that "he *thought* it was in the garage". That is, the question is answered not by extension, elaboration or addition but by appeal to what is given in the text.

But this distinction between what is *given* by the text and what is *taken* from a text is not merely a handy way of answering questions about a text. This distinction between what a text *says* and what it *means* is, we suggest, fundamental to both hermeneutics and epistemology. The argument is as follows: Hermeneutics, the interpretation of texts, and epistemology, the theory of knowledge of the world, both rest upon a distinction between fact and theory, claim and evidence, observations and inferences, however that distinction is posed. One set of events: the facts, the observations, the evidence, the text, the data, is taken as justification for the second set of events: the theory, the inferences, the interpretations, the meanings or whatever. The most general way of putting this is to say that both hermeneutics and epistemology presuppose a distinction between something *given* and something

interpreted. The former provide the evidence for the theoretical claims expressed by the latter.

But the distinction between the *given* and the *interpreted* has an interesting conceptual by-product, the mental activities and mental states we discussed earlier. If what is *given* is seen as something in the world, what is *interpreted* or *meant* must be something in the mind. So mental states, thoughts, meanings and intentions are part and parcel of the apparatus needed for both hermeneutics and epistemology.

Nor is the distinction simply a universally acquired cognitive distinction that children inevitably come to make as they learn to talk and to think. Although conceptual differentiation is the mark of conceptual development, it is not the consequence of that development. The conceptual distinction examined here, appears to have been worked up and refined for the analysis of written texts. That is, it is a category system constructed for problems in the interpretation of written texts rather than for the comprehension of oral discourse. Hence, these conceptual distinctions have a long and distinguished history as the work of Stock (1983) has recently demonstrated. Furthermore, the distinction is not a universal one. In traditional societies, there is some evidence that the distinction is not made. This issue is much too long and complex to discuss here. But the point may be illustrated by reference to a recent paper on Micronesian navigation by Hutchins (1983) who writes: "In our [Western] tradition, the operations of observation, computation, and interpretation are each a different sort of activity and they are executed serially". For the Micronesians, on the other hand: "The interpretations of the result [bearing of the reference island, for example] is embedded in the computation [construction of the horizon image] which is itself embedded in the observation [time of day]" (p. 223).[1]

Not only is it not universal, the distinction between what a text *says* and what it *means* is a distinction that children master as they learn to deal with written texts. When they begin to make the distinction, as we have seen, they begin to justify their *interpretations* by an appeal to what is *given* in the text. Once they begin to do that for text, they are also in a

position to do it for the construction of knowledge. What they *see* and *know* come apart in a way which is completely symmetrical with what they *say* and *understand*. Recent studies by Flavell and his colleagues (Flavell, Flavell & Green, 1982; Flavell and Taylor, in preparation) suggest that it is about this time that children begin to distinguish appearance from reality or to put it a different way, that one could see something without knowing what it was. Thus children may allow that someone *saw* a snake but did not *know* it was a snake. That is to say, their hermeneutics provides a model for their epistemology. This line of argument is developed more fully in Olson (in preparation).

Such a hypothesis, of course, runs far ahead of the available evidence. All we have shown here is that as children learn to make a distinction between what is *said* and what is *meant*, and to attribute a permanence to the former, they begin to use the wording, what was *said* as evidence for the latter in answering questions about text. Further, we found that such appeals to text were closely related to children's comprehension of the mental verbs *think*, *know* and *pretend* when they occur in story contexts. But we have argued that the conceptual categories relevant to texts and their interpretations are also basic to the acquisition of theoretical knowledge about the world and to entertaining complex mental states.

While our earlier studies had shown that young children come to see that what was said may be ambiguous, misleading or otherwise discrepant with what was meant by it, these studies show that as they master this distinction, they begin to use what was said as a means of justifying the interpretations they assigned. While younger children justified their answers by appealing to the world, the older justify them by appealing to the text. In breaking comprehension of language into two parts, the *given* and the *interpretation*, the child has formed the basic categories needed for understanding, in a new way, language, mind and the world.

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NOTES

[1]We are grateful to Erland Helmquist for bringing this article to our attention.

Table 1. Materials for the Think, Know, Pretend task.

1. You're in your bedroom after supper. It's time to do your homework. You (know, think, pretend) that your book is lost. If you (know, think, pretend) your book is lost, is it really lost? Why do you say (yes, no, maybe)?

2. You're playing in the playground with your best friend. You each have a water pistol. You (think, pretend, know) that your pistol has water in it. If you (think, pretend, know) that it has water in it, does it really have water in it? Why do you say (yes, no, maybe)?

3. Your brother (sister) hides a quarter somewhere in the living room. You're not supposed to watch but you peek when he's (she's) hiding it. You (pretend, know, think) that the quarter is under a cushion. If you (pretend, know, think) that it's under a cushion, is it really there? Why do you say (yes, no, maybe)?

4. You and your friend are playing a game with a space ship made of Lego blocks. The space ship falls off the table. You go to pick it up and you (know, think, pretend) that the ship is broken. If you (know, think, pretend) that the ship is broken, is it really broken?

5. You've been playing outside in the cold. When you come in your mother gives you a drink of cocoa. You're about to take a drink, but you (think, pretend, know) that it's too hot. If you (think, pretend know) that the drink is too hot, is it really too hot? Why do you say (yes, no, maybe)?

6. You wake up in the morning and tell your mother that you can't go to school. You (pretend, know) (think) that you have (a stomach ache) (the measles). If you (pretend, know) (think) that you have (a stomach ache) (the measles), do you really have (a stomach ache) (the measles)? Why do you say (yes, no, maybe)?

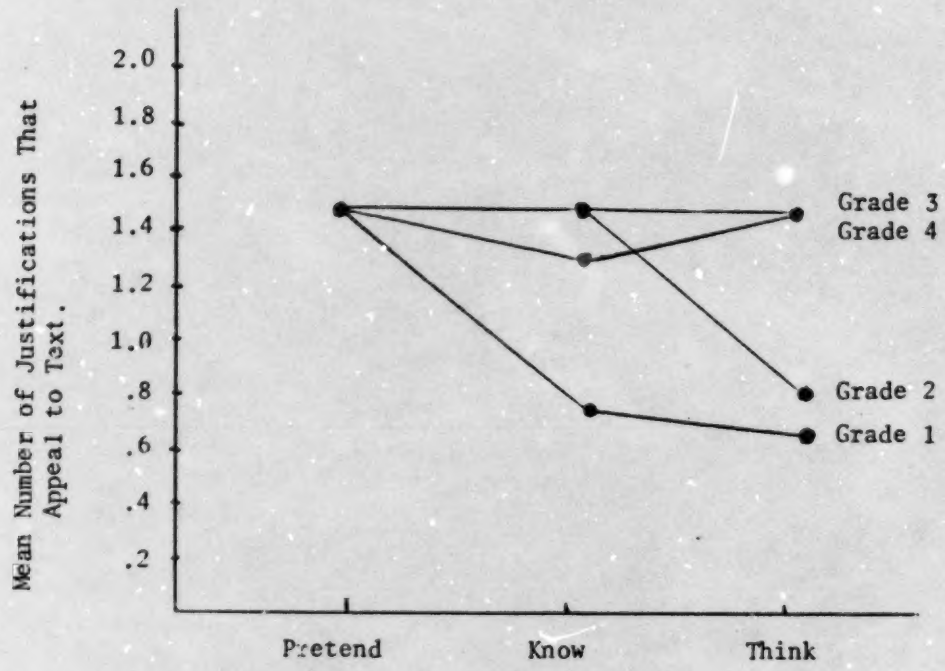

FIGURE 1: Results of Study 1.

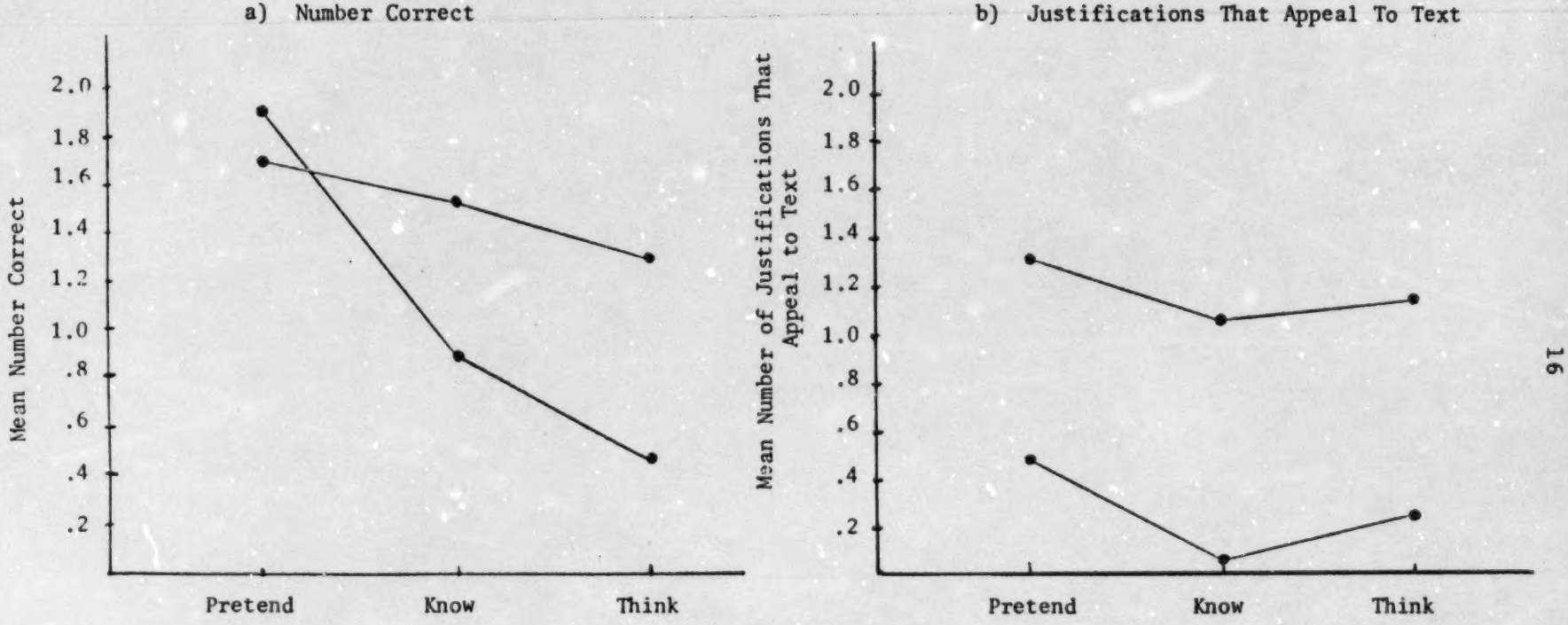

FIGURE 2: Results of Study 2.